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Magnetic breakdown with spin flip

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Abstract

A review is given of the theory of magnetic breakdown with consistent account for the spin degrees of freedom of conduction electrons. An analysis is made of the spectrum of conduction electrons in regions with anomalous approach of the orbits belonging to the different bands. The principal dynamic characteristic of magnetic breakdown in the form of a forth-rank s matrix is derived. It is shown that the spin-orbit coupling leads to a probability of spin flip magnetic breakdown. The main assumptions of the theory of coherent magnetic breakdown are summarised and analysed in the case of simple examples. The spectrum of conduction electrons under magnetic breakdown conditions is discussed. Applications of the theory to the galvanomagnetic effects, to the de Haas van Alphen effect, and to the conduction-electron spin resonance are considered. © 1995 Jointly Uspekhi Fizicheskikh Nauk and Turpion Ltd.

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